

Applicant : Hitoshi FUKUSHIMA et al.  
Serial No. : 09/163,199  
Filed : September 30, 1998  
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Attorney's Docket NO.: 04783-026001 / S279-NO3-  
PO72-US/TO

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REMARKS

In view of the above amendments and the following remarks, reconsideration and allowance of this application are requested. Claims 1, 7, 8, and 18 are pending in this application with claim 1 being independent. Claim 1 has been amended to include the subject matter of claim 2. Claims 2 and 19 have been cancelled.

Attached is a marked-up version of the changes being made by the current amendment.

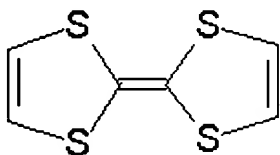
Claim 1 has been rejected as being indefinite under 35 USC §112, second paragraph. The amendment to claim 1 removing the term "arbitrarily" is believed to partially address this rejection. With respect to the term "micro-dots", applicant submits that one of ordinary skill in the art is reasonably apprised of the meaning of this term. Specifically, the term as used by one of ordinary skill in the art refers to an ink-drop ejected from an ink-jet nozzle, which can be a drop having a volume of approximately 1 to 10 pico-liters, a dot having diameter of approximately 17 to 25  $\mu\text{m}$ , and/or dots that are formed on a recording medium at approximately 800 to 1440 dots per inch. Accordingly, applicant respectfully requests that this rejection be withdrawn.

Claim 1 is directed to a method of manufacturing a sensor device that includes a circuit having organic thin films formed on electrodes, and a transducing element capable of transducing information recognized by the organic thin films into electric signals. The method includes printing a solution of thin film material as micro-dots onto surfaces of microelectrodes such that organic thin films are formed on the microelectrodes. The solution of thin film material includes a composition resulting from dissolution of an electro-conductive polymer in a solvent.

Claims 1, 7, 8, and 18 have been rejected as being anticipated by each of the articles by Plotkin and Newman. As indicated in the attached front page and index from *Clinical Chemistry*, the Plotkin article was published on approximately November 10, 1997. As such, Plotkin does not qualify as prior art under 35 USC §102(a). Nonetheless, Plotkin fails to describe or suggest a composition resulting from dissolution of an electro-conductive polymer in a solvent, as recited in claim 1. Plotkin discloses a microelectrode array that includes a

precoated layer of mercury, which is a conductive material, on the electrode. To form the layer, a reagent solution containing approximately 11  $\mu\text{gm}$  of mercury is ink jetted over the array, which consists of 13 rows of 19 microelectrodes, each having a diameter of approximately 40  $\mu\text{m}$ . The reagent solution contains mercuric nitrate, hydroxyethylethylenediaminetriacetic acid ("HEDTA"), carboxymethylcellulose ("CMC"), hydroxyethylcellulose ("HEC"), and potassium chloride. However, none of these materials are electro conductive polymers, as recited in claim 1. Specifically, mercuric nitrate is conductive, but it is a salt, not a polymer. HEDTA is not an electro conductive polymer, but is described as being a chelating agent that stabilizes the mercury. Although CMC and HEC arguably are polymers, neither is electro conductive and both are described as being film-formers. As such, Plotkin fails to describe or suggest a composition resulting from dissolution of an electro-conductive polymer in a solvent, as recited in claim 1. Accordingly, claim 1 and claims 7, 8, and 18, which depend from claim 1, are allowable over Plotkin.

Newman discloses a biosensor that is formed by using an ink-jet printer head to inject a solution of tetrathiafulvalene ("TTF"), ethanol, and tetrabutylammonium perchlorate. However, none of these materials are electro conductive polymers, as recited in claim 1. Specifically, TTF is a molecule (see molecular structure below), not a polymer, and, accordingly, cannot be an electro conductive polymer.



tetrathiafulvalene

Ethanol is a solvent having the molecular formula:  $\text{C}_2\text{H}_6\text{O}$ . Tetrabutylammonium perchlorate is a salt having the molecular formula:  $\text{C}_{16}\text{H}_{36}\text{ClNO}_4$ . Thus, Newman fails to describe or suggest a composition resulting from dissolution of an electro-conductive polymer in a solvent, as recited

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in claim 1. As such, claim 1 and claims 7, 8, and 18, which depend from claim 1, are allowable over Newman.

Applicant asks that all claims be allowed. Please apply any charges or credits to Deposit Account No. 06-1050.

Respectfully submitted,

Date: May 11, 2001

  
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**Version with markings to show changes made**

In the claims:

Claims 2 and 19 has been cancelled.

Claim 1 has been amended as follows:

1. A method of manufacturing a sensor device comprising a circuit having organic thin films formed on **[an arbitrarily chosen]** electrodes, and a transducing element capable of transducing information recognized by the organic thin films into electric signals, the method comprising:

printing a solution of thin film material as micro-dots onto surfaces of microelectrodes such that organic thin films are formed on the microelectrodes,

wherein the solution of thin film material comprises a composition resulting from dissolution of an electro-conductive polymer in a solvent.